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Educational Research Bulletin

MARCH 16, 1949
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Investigations in Teacher Supply and Demand Reported in 1948

By R. H. ELIASSEN AND EARL W. ANDERSON[1]

THE increased enrollments in the lower elementary-school grades and the great imbalance between teacher supply and demand at both the elementary- and secondary-school levels are causing a critical shortage of elementary-school teachers. It threatens to become increasingly acute unless more and better teachers are recruited on that level (2, 6, 26, 37, 41, 43, 51, 53).

Hecht reported that in September, 1948, four million students of school age were not in school; that many were attending school for only six months during that year; and that seventy-five thousand teaching positions were unfilled in the United States (23). In Montana a 50-per cent turnover, especially caused by movements of teachers from rural to urban areas, was reported in some counties (24). The supply of new teachers during the year was only 73 per cent normal: less than three-fifths of those teaching had a four-year college preparation, whereas more than one-third had two years or less of college training (32). The number of new elementary-school teachers qualified for regular certification was only 65 per cent of the 1941 list; in high school it was 112.2 per cent. Physical education showed an increase of 268 per cent, and home economics 68 per cent (37). The total school population in 1948 was estimated to have reached an all-time high of thirty-four million (50). However, the number of emergency certificates issued during the year was ninety-eight thousand, as contrasted with one hundred twenty-seven thousand during the year 1946–47 (15).

In Minnesota, Governor Youngdahl called a conference of interested citizens in April, 1948, to consider the crisis in

[1] Recognition is due Ernie Hanning, a student at Bethany College, for help in collecting information used in this study.

elementary education and to attempt to determine how Minnesota could attract more people into teaching and keep from losing those already in the profession. At this conference it was reported that 38 per cent of the state's rural teachers held substandard certificates (19). Connecticut set up a plan of securing monthly reports from the superintendents of that state regarding supply-demand relationships (49). Many local, state, and national groups became much concerned over the elementary school–teacher shortage. Scholarships for prospective elementary-school teachers were set up in many states.

Of the 799 pupils reporting to Cramer, only 52 per cent planned to teach. Reasons given for their lack of enthusiasm for teaching were low salaries, length of preparation required, and lack of adequate advancement policies for teachers (9). A study reported by Threlkeld revealed that only 6 per cent of 2,706 high-school pupils are interested in teaching, with 41 per cent reporting that "under no circumstances would they go into teaching" (56). In the same study, 24 per cent of 1,556 teachers stated that they would not re-enter teaching if they were out of it. The reasons they gave for their attitude were: low salaries, single salary schedule, general lack of respect for teachers, and the overload of non-teaching assignments. Of 1,041 parents, 52 per cent favored teaching for their children whereas 19 per cent were against it.

Beu listed several reasons for the lack of interest in teaching. Among these were excessive income taxes, almost no difference between salaries paid high-school and college graduates in teaching, "drudgery-like" picture of the profession, and the attitude that an oversupply of teachers will soon occur again (1). Gray states that the cream of the college group is taken by non-teaching professions (20).

In the secondary schools the supply in 1948 was adequate in many fields and there was an apparent surplus in some geographic areas, in English, social studies, physical education for men, mathematics, and science (3, 15, 17, 37, 38, 52). However, in six states in central and south central sections there was a serious shortage of teachers in agriculture, English, industrial arts, mathematics, and general science. By and large, there continued to be a shortage in agriculture, home economics, commercial subjects, industrial arts, music, and physical education for women (37).

The demand for college instructors noticeably increased throughout the country (38, 43). Fields in which teachers were most in demand were economics, science, mathematics, education, home economics, commerce, and physical education. The kindergarten and nursery-school demand exceeded the supply in most parts of the country. The rural schools, as usual, were begging for teachers.

The most significant studies of 1948 were those of Maul and Mosier (38, 40), made under the auspices of the North Central Association, and one carried out by the National Commission on Teacher Education and Professional Standards (41).

DURING 1948 a great deal of emphasis was placed on predictions of the school enrollment for the next decade or more. It was estimated that during the ten years beginning 1949–50, 1,033,994 new elementary-school teachers will be required. Of this number, 262,100 will be needed to fill new positions; 559,434 will be required to replace teachers who will quit teaching; 70,000 will be needed to replace teachers now teaching on emergency certificates; and there will be a demand for 142,460 to reduce the average class size in elementary schools to 25 pupils per teacher. It was predicted that the number of elementary-school positions would increase from an estimated 643,500 in 1947 to 921,000 in 1957–58, the peak year for elementary-school enrollment—an increase of 277,500 positions. Should the 1947–48 birth rate and the number of new teachers trained continue, an estimated shortage of 621,894 elementary-school teachers, for new positions and for replacements alone, would develop by 1958. The accumulated shortage would exceed eight hundred thousand by 1958. According to Elliott, reports indicate that 1948 live births may fall short of the 1947 high rate (14). The estimated average annual demand for elementary-school teachers during the decade will be 103,399, which is about five times the present rate (41).

It was predicted that there will be a decline in the number of teaching positions in the secondary schools until 1951, when the larger enrollments will require a net increase of 73,800 teachers by 1960. Should the present rate of teacher production continue during the ten-year period, there will be a surplus of more than one hundred thousand secondary-school teachers by 1956. The estimated annual demand for secondary-school

teachers will be 25,070 for the decade, in spite of the estimated increase in children of high-school age by one-third between 1948 and 1960 (41).

All in all, the next decade in American education apparently will be a highly critical one, not only in providing an adequate supply of well-trained elementary-school teachers for the estimated seven million increase in enrollment in the elementary schools, but also with respect to providing adequate classrooms and equipment. Boards of education are confronted with the double dilemma of providing for the great influx of pupils and of forecasting the needs for the next twenty-five years. If adequate provision is made for the peak enrollment in the mid-fifties and the birth rate decreases in the next ten years, it is possible that, after adequate provision is made for the peak enrollment of 1958, the schools of the country may have a great deal of school-building space that will not be needed.

MANY recommendations are made for attracting more and better teachers into elementary-school teaching. These include the need for

1. Better and more equitable salaries (2, 9, 18, 25, 33, 39)
2. Higher professional standards (16, 18, 33, 41, 59)
3. Systematic and intelligent recruitment (41, 46, 59, 60)
4. Better public relations (18, 59)
5. Improved school facilities (16, 18)
6. Greater personal freedom for teachers (16, 18)
7. Smaller classes (18)
8. More men teachers (26, 29)
9. Continuous long-range studies of the teacher situation on a co-operative, interstate basis (41, 49)
10. More democratic administrative procedures (18)

The present imbalance of supply and demand between the elementary- and secondary-school fields needs to be corrected through more adequate recruitment and guidance. There is great danger that, if the present situation is allowed to continue, a great surplus of secondary-school teachers will tempt many school administrators to place teachers trained for secondary-school teaching in elementary-school positions.

The American Association of Colleges for Teacher Education suggests a ten-point program to strengthen teaching as a profession. President Walter E. Hager of this association states: "The number of teaching positions available during the

1950's will undoubtedly provide the greatest opportunity for careers the Nation has ever known in any professional or semi-professional field" (59).

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Teaching Opportunities in 1948

By L. N. NICHOLAS, MARY A. EWAN, AND ELISABETH PARTINGTON

THE College of Education of Ohio State University in 1948 graduated the largest class in its history. There were 683 Seniors who completed the work for their degrees. Sixty-eight of this number received the degree of Bachelor of Fine Arts; four, the Bachelor of Music, and twenty-six, the Bachelor of Occupational Therapy—a total of ninety-eight graduates who were not certified and who did not wish or expect to teach. The group of 585 certified candidates is, nevertheless, larger than that of any previous graduating class. Graduate study interested 79 men and women, and 36 graduates accepted other types of employment. Nineteen women were not available because of marriage; and one graduate in Nursing Education who had left the state could not be located. In addition, thirty-nine were available only for a specific location, and eleven were undecided about teaching. This makes a total of 185 men and women who were not available for teaching in September of 1948.

Table I lists the number of graduates of the College of Education for each of the past ten years, together with the number wanting to teach and the percentage placed. The year 1944 shows the smallest number of graduates and also the smallest number available. In 1948 we have the greatest number available since 1940, and 96 per cent were placed. All graduates could have been placed, had some not limited placement to certain locations.

THE Division of Appointments in 1948 received calls from every state but Utah and from the District of Columbia. The total number received was 7,379, a slight decrease from the number received in 1947. Of this number, 3,051 were from out of the state. These included requests for teachers from Alaska, Hawaii, and the Dependent School Service in both Europe and the Far East. Graduates of Ohio State University are still employed in various places around the world, some of them remaining for a second or third year in a given position.

TABLE I

PERCENTAGE OF GRADUATES OF THE COLLEGE OF EDUCATION WHO HAVE SECURED TEACHING POSITIONS IN THE LAST TEN YEARS

YEAR	NUMBER OF GRADUATES*	NUMBER WANTING TO TEACH	PERCENTAGE OF GRADUATES	
			Who Secured Teaching Positions	Not Available
(1)	(2)	(3)	(4)	(5)
1939	522	452	73	13
1940	543	448	76	18
1941	439	296	85	33
1942	365	206	97	44
1943	347	194	97	44
1944	251	169	90	32
1945	306	269	97	12
1946	303	202	96	33
1947	469	260	98	44
1948	683	400	96	41

* The graduates who complete their work during the fall quarter of any year are counted as graduates of the next year, for it is then that they become available for placement.

AN ANALYSIS of the 3,325 requests for teachers received from secondary schools is given in Table II. The first column lists the subject or teaching field for which the call was made; the second column lists the number of calls for each subject as a major; and Column 3 lists those which required teaching one subject only. The fourth column lists the number of calls which required the teaching of second or third subjects. Columns 5, 6, 7, and 8 show the minor fields requested most frequently with each major subject.

Music ranked first this year in the number of requests made, with 487 calls. Of these, 461 listed music only; 26 required the teaching of some other subject—English, in the greatest number of cases. Home economics ranked second, whereas in 1947 it took first place. This year there were 377 requests for home-economics teachers; 108 required Smith-Hughes training for vocational home economics, and 269 were for general home economics.

Other subject-matter fields following music and home economics in order of the number of calls received were English (323), men's physical education (254), commercial subjects (250), mathematics (226), and science (215). In the science area, general science stood first, receiving the majority of calls; while physics ranked second, and biology third, with chemistry

TABLE II

ANALYSIS OF HIGH-SCHOOL CALLS RECEIVED BY THE DIVISION OF APPOINTMENTS FOR THE YEAR 1948

SUBJECT OR TEACHING FIELD*	NUMBER OF CALLS IN 1948			NUMBER OF TIMES OTHER SPECIFIC SUBJECTS‡ WERE CALLED FOR IN COMBINATION WITH THE SUBJECT CONSIDERED			
	Total	As a Single Subject	Combined with Other Subjects				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agriculture (*Ag*)	47	39	8	*IA* 7	*Bi* 1	...	...
Arts—							
Fine (*FA*)	132	132	...	...	...	...	...
Industrial (*IA*)	181	137	44	*PE* 19	*Ma* 6	*Sci* 5	...
Commercial Subjects (*Com*)	250	239	11	*En* 5	*SS* 2	...	...
Distributive education (*DH*)	3	3	...	...	...	...	...
English (*En*)	323	146	177	*Lang* 61	*SS* 43	*Sp* 26	*Ma* 13
Dramatics (*Dr*)	3	2	1	*SS* 1	...	...	...
Journalism (*Jo*)	3	3	...	...	...	...	...
Speech (*Sp*)	20	7	13	*Dr* 9	*En* 3	*Li* 1	...
Geography (*Ge*)	3	1	2	*Gl* 1	*En* 1	...	...
Home Economics (*HE*)	377	290	87	*En* 43	*Sci* 11	*PE* 10	...
Languages (*Lang*)—							
French (*Fr*)	11	6	5	*S* 3	*En* 1	*La* 1	...
German (*Ger*)	1	1	...	...	...	...	...
Latin (*La*)	56	6	50	*En* 38	*S* 6	*Fr* 3	*Ma* 2
Spanish (*S*)	22	3	19	*En* 11	*La* 3	...	...
Total†	90	...	...	...	...	...	...
Library (*Li*)	65	57	8	*En* 7	*FA* 1	...	...
Mathematics (*Ma*)	226	119	107	*Sci* 48	*PE* 14	*En* 13	*Phy* 8
Miscellaneous (*Misc*)	128	...	...	...	...	...	...
Music (*Mu*)	487	461	26	*En* 20	*FA* 3	...	...
Nursing (*Nu*)	6	6	...	...	...	...	...
Personnel and Guidance	33	33	...	...	...	...	...

TABLE II [*Continued*]

Subject or Teaching Field*	Number of Calls in 1948			Number of Times Other Specific Subjects‡ Were Called for in Combination with the Subject Considered			
	Total	As a Single Subject	Combined with Other Subjects				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8
Physical Education (*PE*)—							
Men	254	141	113	*Ma* 35	*SS* 26	*IA* 17	*GS* 14
Women	172	139	33	*Sci* 8	*SS* 7	*Ma* 5	*En* 3
Psychology	21	21	...	...	...	...	...
Science (*Sci*)—							
Biology (*Bi*)	34	10	24	*Phy* 7	*Ma* 6	*PE* 5	*GS* 4
Chemistry (*Ch*)	33	11	22	*Phy* 16	*Ma* 4	*Bi* 1	*En* 1
General science (*GS*)	99	56	43	*Ma* 22	*PE* 7	*Bi* 4	*En* 4
Physics (*Phy*)	49	5	44	*Ma* 14	*Ch* 12	*Bi* 6	*PE* 5
Total†	*215*	...	...	...	...	...	...
Social Studies (*SS*)	183	120	63	*En* 22	*PE* 20	*Ma* 10	*HE* 3
Special Education (*SE*)	103	103	...	...	...	...	...
Total	3,325	2,297	...	...	...	...	...

* In the parentheses after each subject is given the abbreviation used in Columns 5–8.
† Totals when the calls for the subgroups for languages and for sciences are added together are given in italics in Column 2, but they are not included in the final total figure.
‡ Columns 5–8 show additional subjects listed on calls in Column 4.

receiving the least number of calls. Social studies ranked eighth with 183 calls, and industrial arts was ninth with 181 calls. This was a drop in industrial arts from the 267 teachers requested in 1947. Physical education for women listed 172 calls and

TABLE III

THE NUMBER OF MAJORS IN EACH FIELD, THE NUMBER INTERESTED IN TEACHING, AND THE PERCENTAGES PLACED IN EACH AREA, FOR THE YEARS 1947–48

SUBJECT	NUMBER OF MAJORS IN 1948*	TEACHING POSITIONS IN 1948		NUMBER OF MAJORS IN 1947	TEACHING POSITIONS IN 1947	
		Number Desiring	Percentage Placed		Number Desiring	Percentage Placed
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Arts—						
Fine	40	23	100	18	13	100
Industrial	38	27	100	32	24	100
Commercial education	12	10	100	21	13	92.3
Elementary education	128	111	97.3	66	48	100
English	50	23	100	42	24	95.8
Speech	39	11	100	15	11	81.8
Geography	...	...	...	1	1	100
Home economics	14	10	100	4	2	100
Languages—						
French	9	3	66.67	2	1	100
German	...	...	...	..	..	...
Latin	2	...	...	1	1	100
Spanish	8	4	75	13	7	85.7
Mathematics	15	6	100	21	12	100
Music	25	21	100	18	15	100
Nursing education	26	20	100	8	8	100
Physical education—						
Men	78	52	98.08	30	14	100
Women	20	15	100	15	11	100
Psychology	10	5	100	9	5	80
Science—						
Biology	15	11	100	23	16	100
Chemistry	5	3	100	13	5	100
General science	15	11	100	21	11	100
Physics	4	3	100	4	3	100
Social studies	101	57	80.7	93	55	98.1
Special education	4	2	100	..	..	...

* Double majors are counted in each field.

fine arts, 132. Special education, with 103 calls, showed a definite increase over the number received in 1947, when the requests in this area doubled those of the previous year. The 90 calls for the teaching of languages shows a slight drop from the number of language calls for 1947. Latin was asked for 56 times, an increase of 6 calls over the 50 received last year. Spanish came next; then French. There was a decrease in the

number of Spanish, and an increase in the number of French, calls. German was still low on the list. Requests for library-science teachers came to 65 this year, an increase of 14 over the number asked for in 1947. The requests for teachers of speech and of personnel and guidance showed a slight decrease from the number asked for last year.

Of the 3,325 calls for high-school teachers received in 1948, an increase of 43 over the 1947 figure, 2,297 were requests made to fill positions which required the teaching of one subject only. The minors most frequently asked for were English (172), mathematics (117), science (84), physical education (80), social studies (79), and Latin (61).

THE total number of graduates in each teaching field for the year 1948, with the percentage of placement, is given in Table III. The data indicate that 41 per cent of the graduating class of 1948 were not available for teaching this year. The only fields in which all available applicants were not placed were languages, physical education for men, and the social studies. A comparison of the data which follow for 1947 and 1948 indicates the differences in the number graduating, the number available for positions, the number desiring to teach, and the number accepting positions:

	1948	1947
Total graduating	683	469
Total degrees in Bachelor of Fine Arts, Bachelor of Occupational Therapy, and Bachelor of Music	98	68
Total qualified to teach	585	401
Total not available	185	141
Total desiring to teach	400	260
Total accepting positions	384	255

These figures indicate considerable variation in the number of calls received and the number of graduates in each field.

This is true to a greater extent in the special fields than it is in the regular academic subjects. The field of music, in which the greatest number of calls were received, graduated only 25 majors; only 21 were available for teaching. Home economics, commercial education, industrial arts, mathematics, and women's physical education were the subjects in which there were fewest graduates and the greatest number of calls. The number of calls received for Negro teachers was 32, a drop of 15 from the number received in 1947.

Salaries on the secondary-school level ranged from $1,500 to $6,000. No one was recommended in response to calls for positions offering less than $2,000. Experience and graduate training were required on most of the 166 calls listing positions paying $3,000 or above. Many new teachers were able to secure positions paying from $2,500 to $2,800. It was not necessary for men to accept less than $2,400 or for women to accept less than $2,200, unless they asked for one location.

We are glad to note a definite increase in the number of elementary-school teachers graduated in 1948, since the number of elementary-school vacancies to be filled in 1948 was greater than in 1947. There were 128 majors in elementary education, 111 of whom were available for teaching. This almost doubles the number of elementary majors graduated and available last year. The total number of elementary-school

TABLE IV

Distribution of Elementary-School Calls for 1948

Type of Calls	In State	Out of State	Foreign	Total
(1)	(2)	(3)	(4)	(5)
Kindergarten	143	71	63	277
Primary (Grades I, II, III)	530	223	33	786
Intermediate (Grades IV, V, VI)	436	149	45	630
Junior High (Grades VII, VIII)	12	23	16	51
Building teacher-principal	21	....	..	21
Total number	1,142	466	157	1,765

calls received by the Division of Appointments in 1948 was 1,765, an increase of 54 over 1947. Of this number, 451 were out-of-state calls. Michigan made the largest number of requests, with 112; California was next with 92; and New Jersey was third with 40.

The figures for the elementary-school calls are given in Table IV. The largest number was received for teachers of the primary grades (786), the second largest for teachers of the intermediate grades (630), and the fewest for kindergarten teachers (277), an increase, however, of 70 in the last number over the 1947 figure in this area. Calls for seventh- and eighth-grade teachers tripled those in 1947, with the figure rising from 17 in 1947 to 51 in 1948.

In general, the salaries for the majority of positions for inexperienced elementary-school teachers were between $2,000 and $2,400. The complete salary range in the elementary field

was $1,500 to $4,246. The few calls received concerning openings which offered less than $2,000 for a beginning teacher failed to attract the available candidates. Those which offered over $3,000 required experience or special training.

The number of requests for Negro elementary-school teachers was very small, only five coming from Ohio, and ten from out of the state. The salaries offered for these positions ranged from $2,000 to $2,550, when they were listed.

THE Division of Appointments received 212 calls for administrative positions during 1948, 201 during 1947, and 172 during 1946. The vacancies reported were as follows:

Administrative Positions	Number of Calls
College administration	43
Superintendent	31
Executive heads	33
Secondary-school principal	41
Laboratory-school principal	10
Elementary-school principal and supervisor	54
Total	212

The supply of candidates for administrative positions in the public schools has been somewhat larger during 1948 than it was during 1947 and 1946. There is still a need for additional candidates interested in beginning administrative positions in smaller schools. These candidates should have teaching experience and the Master's degree in school administration. For the better administrative positions, the demand continues to increase for candidates with graduate work beyond the M.A. degree. Opportunities in some of the better-paying administrative positions in the public-school field are greater for those with experience who are approaching or have received the doctoral degree. Those graduate students are more in demand who include in their pattern of training, additional work in school administration, in secondary education, including curriculum and philosophy, and, particularly, in elementary education with emphasis on child development and curriculum. Those areas of professional information are essential for the administrator, particularly if he carries out his responsibilities as the local in-service education leader of staff personnel.

The calls for elementary-school principals and supervisors ranged in salary from $2,000 to $5,000; for high-school prin-

cipals, from $2,700 to $8,500; for executive heads in county schools, from $2,900 to $4,500; for superintendents, from $3,600 to $12,000; and for laboratory-school principals, from $3,500 to $5,265. The higher of the salaries listed were usually for a limited number of the better positions only.

THERE was less demand for college staff members than a year ago, although the demand for candidates with Ph.D. degrees continued in practically all areas of specialization.

The Division of Appointments received 1,736 calls for persons to fill college posts from every state except Utah during 1948, as compared with 2,252 college calls during 1947. Ohio and New York ranked first, with 197 calls each; the other high-ranking states, in the following order, were:

State	Calls	State	Calls
Pennsylvania	104	Michigan	79
West Virginia	96	Illinois	78
California	95	Indiana	66
Texas	85		

The majority of college calls were in the following subjects:

Subject	Calls	Subject	Calls
Education	228	English	108
Commerce	148	Psychology	106
Critic teaching	136	Physical education	102
Home economics	121		

The salaries listed for the 1,736 college positions in the great majority of cases ranged from approximately $2,200 to $5,265. In some cases the salaries listed were as low as $1,800 and $2,000, and in others, as high as $8,877 and $9,975. The last two salaries named were given as possibilities for outstanding candidates in education and psychology, respectively. Of the 1,736 college salaries listed on calls with the Division of Appointments, only 214 were for $4,000 or higher.

This division recorded 7,379 calls during 1948, which is a slight decrease from the figure for 1947 and a considerable increase over those for the years previous to 1947, as the following figures show:

	Total Calls
1947	7,451
1946	5,565
1941	3,457
1940	2,235
1936	1,908

The Division of Appointments assisted 610 candidates to secure employment in the various types of positions during

1948. During this year, 14,667 letters were received, while 16,941 were received in 1947. The interviews held with students, faculty members, alumni, and employing officials, concerning teaching opportunities, qualifications of various candidates, salary trends, and other data, numbered 4,096, as compared with 4,811 in 1947. Credentials were sent to 8,588 prospective employers (7,238 in 1947), to help them evaluate candidates who were interested in their positions.

Because of the increased load carried by the Division of Appointments during 1947 and 1948, a reassignment of the responsibility for elementary-school teaching positions was made on January 1, 1949. Miss Elisabeth Partington, assistant to the chairman, has been assigned the responsibility for all interviews and recommendations in connection with elementary-school teaching positions; Mrs. Mary Ewan, associate chairman, will continue to confer with graduates and employers concerning positions in secondary-school teaching, including the several special fields. L.N.Nicholas, chairman, will continue his responsibility for college and administrative positions. Graduates and employers should communicate with the individual responsible for a particular area of specialization. In case administrators wish to write concerning vacancies in several areas, a letter addressed to the Division of Appointments will receive the prompt attention of the respective staff members.

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THE National Foundation for Infantile Paralysis has issued a statement concerning ways of avoiding poliomyelitis, which first strikes in the spring. The injunctions may be summed up as follows: avoid crowded places and new contacts, overfatigue, swimming in water which has not been declared safe by health authorities, and chilling or colds. Special attention should be given to personal cleanliness, protection of food from all possible sources of pollution, and speedy and effective disposal of garbage. Borrowed articles, which frequently carry contamination, are taboo.

Headache, nausea, upset stomach, muscle soreness, or unexplained fever are symptoms of polio. If these occur, a doctor should be called immediately and his directions followed faithfully. Early diagnosis and prompt treatment are important and may prevent crippling.

College Chemistry Students Deficient in Arithmetic: Personal Data

By JOHN R. KINZER AND LYDIA G. KINZER

THE writers have an impression of long standing that there are certain personal factors which influence success in college chemistry. We have previously reported some academic data on a group of 120 students who were deficient in arithmetic knowledge at the college level.[1] The present article is a report of some personal data that may be related to academic status. The information presented here concerns the same students reported on previously. This information was gathered from the various college offices and from the student-personnel cards which were obtained from the students during Freshman Week.

TABLE I

NUMBER OF STUDENTS AND THEIR CHEMISTRY MARKS CLASSIFIED BY HOURS PER WEEK PLANNED FOR STUDY

HOURS PER WEEK	NUMBER OF STUDENTS AND THEIR MARKS		
	A and *B*	*C*	*D* and *E*
(1)	(2)	(3)	(4)
35–50	4	5	0
25–34	5	5	9
20–24	9	22	10
0–19	9	17	25

It is difficult to find out from questionnaire techniques what a student's work habits are, but the freshman personnel card contains one item that may be of possible value in predicting study skills. That item is, "I plan to study —— hours each week, this quarter." For the group of 120 students in this report, the time distribution and chemistry marks are as shown in Table I. It seems fairly obvious upon inspection of the data in the table that there are differences favoring those who spend the most time in study. To verify the truth of this supposition the chemistry marks of the students who planned to study more than 25 hours and those who planned to study less than 19

[1] Kinzer, John R., and Kinzer, Lydia G. "College Chemistry Students Deficient in Arithmetic: Academic Data," EDUCATIONAL RESEARCH BULLETIN, XXVII (January 21, 1948), pp. 8–10, 27–28.

hours each week are contrasted in Table II. It should be remembered that the figures given in the first column of Table II do not necessarily coincide with the actual amount of time spent in study but represent the amount of time students said that they planned to study. The students who stated that they planned to study between 25 and 50 hours were, at least, able to make higher marks, for this group of students was noticeably superior in performance to those that study 19 hours or less. The mean marks of the two groups are significantly different.

TABLE II

AVERAGE MARKS* IN CHEMISTRY OF THE STUDENTS CLASSIFIED ACCORDING TO THE NUMBER OF HOURS PLANNED FOR STUDY

Planned to Study	Number of Students	Average Mark†	Standard Deviation
(1)	(2)	(3)	(4)
25–50 hours	28	2.18	0.98
19 or fewer hours	51	1.49	1.06

* Average marks of the group were computed as a point-hour ratio, using the numerical values *A* is 4; *B*, 3; and so on.

† The test of the significance of the difference of the average marks of these groups (t) is 2.83; the confidence level (P) is .01.

TABLE III

AVERAGE MARKS IN CHEMISTRY RECEIVED BY STUDENTS WHO LIKED OR WHO DISLIKED MATHEMATICS AND CHEMISTRY

Attitude	Number of Students	Average Mark*	Standard Deviation
(1)	(2)	(3)	(4)
Liked math and chemistry	23	2.09	.72
Disliked math and chemistry	37	1.87	1.10

* The test of the significance of the difference of the average marks of these two groups (t) is 0.85; the confidence level (P) is 0.40.

A student's liking or disliking for a school subject is also an item of possible significance in predicting success. Table III presents the attitudes of a number of students toward mathematics and chemistry, with the corresponding chemistry marks. The differences which appear in this table are not significant. The combination of those who like mathematics or chemistry as opposed to those who dislike mathematics or chemistry yields a t value[2] of only 0.85. These data were gathered on those

[2] The "t" is a test of the significance of a difference between the means of two small samples and is described by the English statistician, R. A. Fisher, in his book, *Statistical Methods for Research Workers* (London: Oliver and Boyd, 1946. 10th Edition. pp. 122ff).

students who had been given remedial instruction in arithmetic. The fact that we cannot reject the hypothesis that there is no difference is of special importance because, for the students who were deficient in arithmetic but who did not come for remedial help (171 individuals), the hypothesis that there is no difference can be rejected at the 5-per cent level of confidence.[3] This is a problem that needs further investigation.

TABLE IV

AVERAGE MARKS OF WOMEN AND MEN STUDENTS IN CHEMISTRY

Sex	Number of Students	Average Mark*	Standard Deviation
(1)	(2)	(3)	(4)
Women	56	1.89	0.95
Men	64	1.67	1.09

* The test of the significance of the difference of the average marks of these groups (t) is 1.17; the confidence level (P) is 0.30.

TABLE V

FAMILY STATUS IN ITS RELATION TO THE STUDENTS' AVERAGE MARKS IN CHEMISTRY

Family Relationships	Number of Students	Average Mark†	Standard Deviation
(1)	(2)	(3)	(4)
Size of family—			
Only child	18	1.28	.89
Family of 4 to 11 children	52	1.83	.98
Place in Family—			
Youngest in family	25	1.92	.92
Oldest in family	33	1.76	.90
Other children*	44	1.91	.96

* "Other children" mean not the oldest or youngest in a family of more than two children.

† The test of the significance of the difference of the average marks of the following contrasted groups are:

	t	P
Only—four or more children	2.10	.05
Youngest—other	.04	..
Oldest—other	.70	.50
Only—other	.85	.40

There was no significant difference between veterans and non-veterans. The difference between the average marks of men and women students was only slightly significant (P is .30).

[3] The "P" value used in connection with the t test of significance shows the chances in one hundred of getting a larger t if another sample is drawn from the same population. For example, $P = .01$ in Table II means that there is one chance in one hundred of obtaining a greater t value by drawing successive samples from the same population. In Table IV the P value is .30, which means that the chances are only 30 in one hundred of obtaining a larger value of t (*see* Fisher, *op. cit.*, p. 126).

[*Continued on page 83*]

EDITORIAL COMMENT

Higher Salaries for Superior Teachers

FOREIGN observers of American schools are often surprised at the great disparity between the salaries of teachers and administrators. They believe that we pay even the best teachers entirely too little in proportion to what we pay administrators. Students of American education know that many good teachers feel that they cannot afford to remain in teaching; they either leave the profession or seek administrative or supervisory positions. Thus the actual work of teaching tends to be done by the less able ones of those who enter the profession. There are, of course, many exceptions.

One of the most important means of recruiting and retaining able teachers is to provide attractive salaries. To be most effective in doing this, the salary scale should be such as to reward superior teachers more liberally than others. This principle is quite generally recognized as sound in theory, but it has been difficult to carry out in practice. The correlation between quality of work and length of service (after the first few years) is not high; hence salary increments based only on length of service are not consonant with the principle. Teaching is such a complex art that it is exceedingly difficult to rate its practice objectively. Teacher rating by supervisors or administrators as a basis for salary determination tends to strain relations among members of the staff; it sometimes leads to suspicions of subservience and favoritism.

A noteworthy proposal for rewarding outstanding teaching competence has recently been made by Alfred D. Simpson and persons associated with him in an elaborate salary survey of the public schools of Hartford, Connecticut. The survey recommends a single basic salary scale "with conditional increments which will carry any teacher who does *satisfactory* service from a decent minimum to a rewarding maximum."[1] Teachers would be divided into classes on the basis of their professional preparation, and those in each class would be required to carry on in-service preparation at a minimum rate, varying from one

[1] Simpson, Alfred D., and associates. "Survey of Instructional and Administrative Salaries, Hartford Public Schools." Cambridge, Massachusetts: Center of Research and Field Studies, Harvard Graduate School of Education, 1948. p. 9.

to four semester-hours a year. Those who did this and did "satisfactory" work in the classroom would receive increments up to the "rewarding maximum."

But the recommendation that we are chiefly concerned with here proposes an "optional competence differential" for those who show competence above the "satisfactory" level. If this recommendation were adopted, any teacher who had six years of experience in the Hartford schools and who had carried on the in-service training required of teachers in his class could apply for "competence-scale classification." Before the rating was granted, the teacher would have to satisfy two further requirements. First, he would have to make a score at or above the 60th percentile on the Common Examination of the National Teacher Examination. This examination measures professional information, mental abilities and basic skills, and general culture. Second, the teacher would have to secure a judgment from the Board of Review that all other aspects of his competence were within the upper 40 per cent of the competence range of Hartford teachers. The judgment of the Board of Review would be based upon an examination of cumulative personnel records; interviews and conferences with teachers concerned and with administrators, supervisors, and personnel staff; observation of the work of teachers; and such other materials and procedures as the board might see fit to use.

The Board of Review would consist of three persons "competent in the selection, training, and the evaluation of teachers, and with suitable training therefor," at least two of whom were from outside the Hartford system. One of the members would be chosen by the superintendent of schools, another by the Staff Council on Personnel Development, and the third by the other two. The members would be paid an appropriate sum for their services.

A "competence-scale classification" would be valid for five years and would bring a salary increase of $250 for the first year and an annual additional increment of $50 so long as the teacher continued to qualify, up to a maximum of $950. Thus an outstanding teacher might qualify for a salary comparable to that of a principal. At the end of five years the teacher could requalify if he had carried on at least ten semester-hours of

[*Continued on page 84*]

READINGS

Books to Read

SMITH, ROBERT ORA, AND FITZSIMMONS, DONALD B. "Personality and Cultural Factors Affecting the Religion of College Students." A thesis presented to the Faculty of the Department of Sociology, University of Michigan, in partial fulfillment of the requirements for the degree of Master of Arts in Sociology. Lithoprinted. 1947.

The survey on which the study is based was made at the Yale Divinity School in 1944-45. One hundred forty men were asked for information about themselves. The students were selected from all three years of the course, and some on the graduate level. About a third were Methodist in background, and a seventh were Baptist. The rest ranged over ten different denominations. Nearly half had come from church-related colleges and universities. Most were from Pennsylvania, Ohio, and New York. Nearly half came from families whose heads were engaged in the secular professions or business. About a fifth had fathers who were ministers or were engaged in religious work. In 60 per cent of the cases the families of the men had had strong religious interests. A good third of the men were active in fraternities. Sixty-five per cent were members of the campus Christian Association. In college, major studies had been history, religion, sociology, or philosophy.

The persons most strongly influencing the religion of the men were professors and ministers. Most of the students had a very strong belief in the validity of religion when they entered college. Only three per cent were indifferent or skeptical.

Factors working against a positive religious interest in college ranged from (1) professors and (2) students to (24) interracial difficulties. Positive factors ranged from (1) professors, also, through (2) opportunity for religious and social expression to (25) the work of God.

It was suggested by the men that religious agencies could better serve the need of students (1) by greater emphasis upon religious worship, (2) broader basis of membership and control, (21) more publicity. College and university administrations could better serve the needs of students by (1) recognizing the need, (2) more vital chapel services, and so on to (23) fairer election of class religious officers.

Religious beliefs of those with strong convictions on entering changed (1) by growth in insight and religious knowledge, (2) development of individual philosophy of life, (11) realization of inadequacy of one's knowledge.

Decision to enter religious work was made by most of the men while in college, especially in the cases of those coming from private and public institutions. Many had considered law, teaching, and other vocations first. Sensitivity to need for religious work, personal contacts, and influence of religious groups had been the chief influences leading to decisions. The largest group chose the ministry as the form of religious work. Reactions based upon personality traits and the temper of the institution attended varied according to the liberal or conservative backgrounds of the students. Men from the south-

eastern section of the country attended church services while in college more frequently than the men from any other sections.

Chapter XIV summarizes certain findings of previous investigations of aspects of the question. Seven pages of bibliography follow. An appendix reprints an article, "The Place of Religion in College," previously published as Chapter VIII of the volume *From School to College*, Yale University, 1939, based upon the doctoral dissertation of D.D. Rughley, accepted by Yale University, 1936, in partial fulfillment of degree requirements.

As a fact-finding study, the work establishes on an objective basis what might well have been one's previous impressions.

ALBERT E. AVEY

FOWLKES, JOHN GUY, AND MORGAN, DONALD A., editors. "Elementary Teachers' Guide to Free Curriculum Materials." Randolph, Wisconsin: Educators Progress Service, 1947. xi+215 pp. (Fourth annual edition).

Here is another publication of the Educators Progress Service which is designed to meet teacher needs for current and easily accessible materials. This paper-bound handbook comprises the fourth edition of the *Guide* and is a complete revision and reorganization of the previous three editions. It provides an annotated schedule for free maps, bulletins, atlases, pamphlets, exhibits, charts, scripts, transcriptions, and books. These relate to a wide variety of subjects, namely, accident prevention and safety, agriculture, air-age education, audio-visual aids, business education, clubs and scouting, conservation, fine arts, guidance, health and physical education, home economics, industrial arts, langauge arts, science, social studies, special days, and transportation. A new section on "Teacher Resource Material" lists manuals and handbooks valuable in determining goals and standards for teaching. Much of the material can be interpreted for child use. The "Title" and "Source" indexes with cross indexing make the guide functional. For quick reference the sections are printed on paper of different colors.

The *Guide* should prove most valuable to teachers interested in enriching the curriculum or in building up-to-date resource files. This publication will help teachers conserve time and energy in their search for worth-while, free materials.

KAY BURGESS

LODGE, R. C. *Plato's Theory of Education.* New York: Harcourt, Brace and Company, 1947. viii+322 pp.

This volume is a labor of love. It is not only an understanding of one philosopher by another. It is a sympathetic presentation of the Master Philosopher by a loyal follower. Intimate knowledge of the mind of Plato is indicated by the detailed annotations which support the assertions presented, covering in detail not only the *Dialogues* but also important commentators and relevant writers.

The subject-matter of the volume includes a discussion of Plato's conception of the nature and aim of education, his theory of education for the professions, for citizenship in general, and for leadership in society. The techniques and procedures of the teaching and learning process, the nature of mind, and subject materials for study are considered thoroughly. The place of education in democratic living, as Plato conceived it and as modern students of education present it, is given careful attention. The general relevance of

Plato's conceptions for present-day education is strongly defended. The differences are to be found not in the main principles and objectives, but in details due to the difference between the historical conditions under which the Greeks lived and the conditions under which moderns now live. An appendix discussing the population of the ideal community and the proportionate numbers of school children, and persons available for different social functions, and one by Solomon Frank on the education of women, lend added interest to the volume.

ALBERT E. AVEY

THORPE, LOUIS P. *Child Psychology and Development.* New York: Ronald Press Company, 1946. xxvi+781 pp.

This is a completely thorough textbook in the field of child psychology. The author has utilized and interpreted a surprisingly large amount of experimental material in this field. In cases of difference of opinion, and contradictions in experimental results, the various points of view are objectively presented, and the reader is left to draw his own conclusions. For example, the question of whether or not the intelligence quotient is a constant factor is discussed at length, and many studies are reviewed in great detail. Criticisms of the studies are given. The author then concludes that "it is probably not possible in the light of present knowledge to settle the question of intellectual or any other kind of human potentiality on positive grounds. . . . We might, nevertheless, be pardoned for leaning, in the absence of certainty, toward the more socially hopeful interpretations which stress the child's educability and the possibilities of a stimulating environment" (page 124).

At the end of each chapter there are a summarizing section and a list of questions which can be used for discussion purposes. Further reading suggestions are also given.

A complete and detailed treatment of all phases of child development and of the various methods of studying infants and children comprise the first twelve chapters. The last three chapters deal with the social education of the child, his personality growth and needs, and what constitutes good mental hygiene for children. The excellent discussions in this part of the book should be helpful, not only to students in the classroom, but to teachers, parents, and social workers as well. Child-study groups could use this book profitably as the basis for several years' study.

AMALIE K. NELSON

HARRIS, SEYMOUR E. *How Shall We Pay for Education?* New York: Harper and Brothers, 1948. x+214 pp.

Although the title of this book is "How Shall We Pay for Education?", it deals largely with problems of higher education and, more particularly, with those of the private institutions. The author discusses at length the current crisis in education and concludes that, because of that crisis, teachers are underpaid, schools and colleges tend to introduce economies which impair the quality of the product offered, and higher institutions of learning are moving in the direction of requiring students to pay what their education costs. Commenting further on this crisis, the author has this to say:

> All this is unfortunate. The country can afford to pay more for its education. Unless means are found to force the country to pay its educational bill, teachers will continue to desert, the flow of talent will be diverted to other fields, the undemocratic and

costly (to the nation) practice of shutting the universities and colleges to all but the wealthy and a very small percentage of the poor who qualify as top students will be widely adopted (page 1).

There is, also, extended discussion on the question of supply and demand for college-trained persons. The author points out that between 1910 and 1940 the employment opportunities for college-trained personnel increased 24 per cent in contrast with a 320–per cent increase in college enrollments during the same period. If the prediction of the President's Commission on Higher Education that the number of college students will be doubled by 1960 is realized, then obviously this problem of employment becomes more acute. The author believes that the solution to this disparity between trends in college enrollment and employment opportunities "seems to lie largely in the dissociation of education and professional training for a large proportion of those who now are in college or about to go to college, and the substitution of a 2-year for the popular 4-year college course" (page 6). In the matter of public support for education, the author points out that public-chool expenditures gradually rose from about .9 per cent of the national income in 1907 to about 3 per cent in 1940. However, by 1947 it declined to about 1½ per cent. He further concludes that the Federal Government "should assume a responsibility for education which it has so far shown little disposition to do." Accompanying this statement is the fact that in 1947 the Federal Government furnished about $80,000,000 for all educational purposes exclusive of G.I. subsidies, which was about one-fourth of 1 per cent of all Federal expenditures that year. The major reasons for the conclusion that the Federal Government ought to provide a larger share of the cost of education are its large taxing powers, the importance of education in the social order, the necessity of maintaining a satisfactory system of education even in depression periods, and the wide variation among the states in their ability to finance education.

In the section dealing with the financial status of colleges and universities, much space is given to problems of endowment, tuition, and the like. In discussing the latter, the point is made that tuition charges ought to be fixed in the light of prospective changes in income. Commenting on the future, the author has this to say: "We are not likely to manage our economy so badly as in the thirties, when the unemployed averaged 10 millions and about one-quarter of our resources remained idle."

The book is well documented and contains much useful information for any person who has responsibility for financing education, either public or private, or on the elementary, secondary, or higher educational levels.

T. C. Holy

National Education Association, Committee on Tenure and Academic Freedom. Teacher Tenure: Analysis and Appraisal. Washington, D. C.: National Education Association, 1947. 71 pp.

This report relating to teacher tenure in the public schools of the United States contains a broad overview of many aspects of teacher-tenure practices. In addition it lists detailed legislation covering each state in which tenure laws have been passed.

There is no legislative provision relating to teacher tenure in seven states and in Alaska. In two states annual elections are required; in three others, elec-

tions for longer than one year are permitted. Thus in 12 states there is no mandated protection of teachers through tenure laws.

Continuing contracts are required in 18 states and in subdivisions of nine others. Principals are covered in 11 of the states, supervisors in four, and superintendents in seven. The deadline for notification in case of continuation of a contract, in the continuing-contract states, is between March 1 and June 1 in all cases, with April being the most frequent deadline.

Permanent-tenure provisions are state-wide in 13 states and Hawaii; in all but rural areas in three; in some subdivisions of the state by class or by name in 31 states. Many tenure laws are ambiguous as to the status of administrators and supervisors.

All permanent-tenure laws provide for probationary terms for teachers, except those covering teachers in Iowa and in Waterbury, Connecticut. The most common probationary period is three years. Substitute service is not included under most of the tenure laws.

In five states probationary teachers may be dismissed at any time, whereas 14 state laws are silent regarding the dismissal of probationary teachers.

This pamphlet should be found useful by those who wish to find condensed information regarding teacher-tenure practices and those who are concerned about improving the tenure provisions in their states or districts.

EARL W. ANDERSON

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College Chemistry Students Deficient in Arithmetic: Personal Data

[*Continued from page 76*]

A student's place in the family as an only child, the oldest child, or the youngest child may contribute to the development of traits which will handicap him in school. With this thought in mind certain comparisons have been made with chemistry marks (*see* Table V). Students who were oldest or youngest children in a given family did not receive marks which significantly differed from those received by "other" children,[4] but children classified as "only" children did worse than those children who came from families of from 4 to 11 children. In comparing an only child with others who are not classified as "oldest" or "youngest," the "only" child still makes a poorer showing than those children who might be considered the "in between" children of large families. These differences are statistically significant.

Most studies in the field of the prediction of academic

[4] "Other" means not the oldest, not the youngest, and not an only child.

success have dealt with data of an academic nature. This brief study furnishes hypotheses for future studies which take personal variables into consideration. [Vol. XXVIII, No. 3]

Higher Salaries for Superior Teachers

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in-service preparation, again made a score of 60 percentile or higher on the Common Examination of the National Teacher Examination, and secured a renewal rating by the Board of Review. There would be no limit on the number of renewals. In the case of all teachers newly employed in Hartford after January 1, 1949, a Master's degree would be required for the first renewal. A teacher who failed to qualify for a renewal would drop back to the salary level of "satisfactory" teachers of the class to which he belonged. The report suggests that a second competence scale, involving an additional increment of perhaps $50 a year, be established in the future.

Obviously, this is a carefully thought-out proposal to avoid some of the pitfalls that beset attempts to reward special competence in teaching. It is not perfect, of course. It seems to this writer to lay too much stress on in-service college training as a condition of qualifying for salary increases. Study in college is an indispensable means of in-service education of teachers, but it is not the only means. Probably many teachers could improve themselves more by devoting some of their "in-service training" effort to travel or to working at various jobs, thus becoming familiar at first hand with the way different groups in the population live and work, than they could by devoting all their time to taking college courses. On the other hand, evaluating informal educational experience in terms of increased teaching competence would present grave difficulties and might easily lead to abuses. Perhaps an outside Board of Review such as is proposed in the Simpson survey could make such an evaluation in a fairly satisfactory manner.

The proposal of Mr. Simpson and his associates is an important contribution to the literature. It deserves wide reading and discussion.

R. H. E.